



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,667	07/14/2003	Jun Sumino	67161-068	4737

7590 03/04/2005
McDermott, Will & Emery
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

PRENTY, MARK V

ART UNIT	PAPER NUMBER
----------	--------------

2822

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/617,667

Applicant(s)

SUMINO ET AL.

Examiner

MARK V. PRENTY

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date January 28, 2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Art Unit: 2822

This Office Action is sent pursuant to the previously mailed Withdrawal From Issue letter.

Claims 1 and 3-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (newly cited United States Patent 6,620,681 – hereafter Kim).

With respect to independent claim 1, Kanamori discloses a semiconductor device (see the entire reference, particularly the Fig. 2H and Fig. 3 disclosure) comprising: a semiconductor substrate 100, having a main surface, in which first and second trenches 109 (Fig. 2C) are formed in said main surface at a distance away from each other; first and second isolation insulating films 124 filling in said first and second trenches; a gate insulating film 101/102, formed on said main surface located between said first isolation insulating film and said second isolation insulating film, including silicon (see column 5, lines 36-40), having an end portion in a birds beak form (Fig. 3's "a") which brings into contact with said first isolation insulating film and said second isolation insulating film, respectively; and a silicon film 103/104 formed on said gate insulating film, having a thickness exceeding 0 and being less than 50 nm (see column 5, lines 52-55) in an intermediate portion between said first isolation insulating film and said second isolation insulating film, and being thinner than said thickness on said end portion (see Fig. 3); and a conductive film 126 (Fig. 2H), including silicon (see column 8, lines 45-58), located on and connected to said silicon film 103/104.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 3, each of Kim's first and second isolation insulating films 124 [and] has a second top surface, and the distance from said main surface to said second top surface (i.e., the total thickness of Fig. 2F's layers 102/104/106/108, which are derived from Fig. 2A's layers 101/103/105/107, respectively), is at least 20nm (see the Fig. 2A disclosure).

Claim 3 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 4, each of Kim's first and second isolation insulating films 124 has a second top surface, and the distance from said main surface to said second top surface (i.e., the total thickness of Fig. 2F's layers 102/104/106/108, which are derived from Fig. 2A's layers 101/103/105/107, respectively) is at least the sum of the thickness of said gate insulating film 101/102 and said silicon film 103/104.

Claim 4 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 5, the thickness of Kim's conductive film 126 is at least 50nm and at most 200nm (see column 8, lines 45-50).

Claim 5 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 6, each of Kim's first and second isolation insulating films 124 has a second top surface, and said conductive film 126 is formed to cover at least part of said second top surface (see Fig. 2H).

Claim 6 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 7, Kim's gate insulating film 101/102 has a first top surface, each of said first and second isolation insulating films 124 has a second top

Art Unit: 2822

surface, and the distance from said main surface to said second top surface is greater than the distance from said main surface to said first top surface.

Claim 7 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

With respect to dependent claim 8, Kim's silicon film 103/104 includes phosphorous (see column 5, lines 52-57).

Claim 8 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kim.

Claim 9 is allowable over the prior art of record.

The prior art does not disclose or suggest the allowable semiconductor device taken as a whole, including the sidewall insulating films.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.


Mark V. Prenty
Primary Examiner


AMIR ZARABIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800